



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/809,842

03/26/2004

Yoshinori Kida

SNY-055

8150

20374 7590 01/26/2007

KUBOVCIK & KUBOVCIK

SUITE 710

900 17TH STREET NW

WASHINGTON, DC 20006

EXAMINER

DOVE, TRACY MAE

ART UNIT

PAPER NUMBER

1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

01/26/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/809,842	<b>Applicant(s)</b> KIDA ET AL.	
	<b>Examiner</b> Tracy Dove	<b>Art Unit</b> 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/26/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on 3/26/04 has been considered by the examiner.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9-16 recite the limitation "the main solvents". There is insufficient antecedent basis for this limitation in the claim. Furthermore, "γ-butyrolactone and sulfolane as the main solvents" is indefinite. The term "main" is relative.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 5, 7, 9, 11, 13 and 15 are rejected under 35 U.S.C. 102(b)/103(a) as being anticipated by, and alternatively unpatentable over, Hatazaki et al., US 2001/0038949.

Hatazaki teaches a non-aqueous secondary battery having excellent charge/discharge characteristics and a long cycle life comprising a positive electrode, a negative electrode and a non-aqueous electrolyte including a non-aqueous solvent and a solute (abstract). The negative electrode includes a carbon active material (0057-0059). The solvent may consist of 80% of  $\gamma$ -butyrolactone (0011). It is preferable that at least one selected from the group consisting of a carbonic acid ester type additive and a sulfur compound type additive is further added to the non-aqueous electrolyte (0012-0014). The amount of carbonic acid ester additive and/or sulfur compound additive is preferably 0.1-10 parts by weight per 100 parts by weight of the non-aqueous electrolyte (0049). In the case where the carbonic acid ester type additive and the sulfur compound type additive are used at the same time, preferable ratio of carbonic acid ester to sulfur compound is 1:9 to 9:1 (0050). The carbonic acid ester additive may be vinylene carbonate and/or vinylethylene carbonate. Vinylene carbonate is a particularly preferred carbonic acid ester additive (0047). Sulfolane is a preferred sulfur compound additive (0048).

Thus the claims are anticipated. The claims are alternatively unpatentable because Hatazaki does not teach a specific example including sulfolane, vinylene carbonate and vinyl

Art Unit: 1745

ethylene carbonate. However, it is prima facie obvious to combine two compositions, each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose, *In re Kerkhoven*, 205 USPQ 1069, 1072. A 35 U.S.C. 102 /103 combination rejection is permitted if it is unclear if the reference teaches the range with "sufficient specificity." The examiner must, in this case, provide reasons for anticipation as well as a motivational statement regarding obviousness.

\*

Claims 2, 4, 6, 8, 10, 12, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatazaki et al., US 2001/0038949.

Hatazaki teaches a non-aqueous secondary battery having excellent charge/discharge characteristics and a long cycle life comprising a positive electrode, a negative electrode and a non-aqueous electrolyte including a non-aqueous solvent and a solute (abstract). The negative electrode includes a carbon active material (0057-0059). The solvent may consist of 80% of  $\gamma$ -butyrolactone (0011). It is preferable that at least one selected from the group consisting of a carbonic acid ester type additive and a sulfur compound type additive is further added to the non-aqueous electrolyte (0012-0014). The amount of carbonic acid ester additive and/or sulfur compound additive is preferably 0.1-10 parts by weight per 100 parts by weight of the non-aqueous electrolyte (0049). In the case where the carbonic acid ester type additive and the sulfur compound type additive are used at the same time, preferable ratio of carbonic acid ester to sulfur compound is 1:9 to 9:1 (0050). The carbonic acid ester additive may be vinylene carbonate and/or vinylethylene carbonate. Vinylene carbonate is a particularly preferred carbonic acid ester additive (0047). Sulfolane is a preferred sulfur compound additive (0048).

Art Unit: 1745

Hatazaki does not explicitly state sulfolane is contained in an amount of at least 15% by volume based on the total volume of the solvent. However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because claims that differ from the prior art only by slightly different (non-overlapping) ranges are prima facie obvious without a showing that the claimed range achieves unexpected results relative to the prior art. See *In re Woodruff*, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also *In re Huang*, 40 USPQ2d 1685 (Fed. Cir. 1996) Claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art.

Furthermore, the courts have ruled where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Swain et al.*, 33 CCPA 1250, 156 F.2d 239, 70 USPQ 412. The courts have held that a limitation merely with respect to proportions in a composition of matter or process will not support patentability unless such limitation is "critical". *Minerals Separation, Ltd. v. Hyde*, 242 U.S. 261 (1916).

\*

Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatazaki et al., US 2001/0038949 in view of Kameda et al., US 6,632,569.

Hatazaki teaches a non-aqueous secondary battery having excellent charge/discharge characteristics and a long cycle life comprising a positive electrode, a negative electrode and a non-aqueous electrolyte including a non-aqueous solvent and a solute (abstract). The negative electrode includes a carbon active material (0057-0059). The solvent may consist of 80% of  $\gamma$ -

Art Unit: 1745

butyrolactone (0011). It is preferable that at least one selected from the group consisting of a carbonic acid ester type additive and a sulfur compound type additive is further added to the non-aqueous electrolyte (0012-0014). The amount of carbonic acid ester additive and/or sulfur compound additive is preferably 0.1-10 parts by weight per 100 parts by weight of the non-aqueous electrolyte (0049). In the case where the carbonic acid ester type additive and the sulfur compound type additive are used at the same time, preferable ratio of carbonic acid ester to sulfur compound is 1:9 to 9:1 (0050). The carbonic acid ester additive may be vinylene carbonate and/or vinylethylene carbonate. Vinylene carbonate is a particularly preferred carbonic acid ester additive (0047). Sulfolane is a preferred sulfur compound additive (0048).

Hatazaki is silent regarding the intensity ratio of the carbon material of the negative electrode.

However, Kameda teaches a non-aqueous solvent secondary battery comprising a carbon negative electrode active material. The carbon material has a plane space  $d_{002}$  of a (002) plane less than 0.337 nm, a crystallite size ( $L_c$ ) of 90 nm or higher and an R value, as a peak intensity ratio of a peak intensity of  $1360\text{ cm}^{-1}$  to a peak intensity of  $1580\text{ cm}^{-1}$  in a Raman spectrum of 0.20 or higher (abstract).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have been motivated to use the carbon material of Kameda for the carbon material of Hatazaki. Both Kameda and Hatazaki are directed toward non-aqueous solvent electrolyte secondary batteries having carbon negative electrode active material. One of skill would have been motivated to substitute the carbon material of Kameda for the carbon material of Hatazaki in order to improve the battery

Art Unit: 1745

capacity, prevent irreversible capacity admitted in the initial battery cycle and improve quick charging and discharging characteristics (abstract of Kameda).

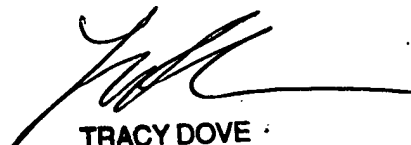
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 18, 2007

  
**TRACY DOVE**  
**PRIMARY EXAMINER**